REMARKS/ARGUMENTS

Favorable consideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 27-40 are pending, Claims 1-26 cancelled and Claims 27-40 added by the present amendment.

In the Official Action, Claims 1-8 and 10-26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Feinberg et al. (U.S. Patent No. 6,798,745, hereinafter Feinberg) in view of Dziekan et al. (U.S. Patent No. 6,704,288, hereinafter Dziekan); Claim 9 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Feinberg in view of Dziekan and Veres et al. (U.S. Patent No. 6,807,156, hereinafter Veres).

Briefly recapitulating, new Claim 27 is directed to a system for use with a broadband network. The system includes a network-metrics apparatus configured to obtain performance metrics for at least a portion of the broadband network. The system also includes a data processing apparatus coupled to the network-metrics apparatus and configured to combine performance metrics obtained by the network-metrics apparatus for lower topological levels of the network into a metric of network performance for a higher topological level of the network. The higher topological level includes the lower topological levels.

Claim 34 is directed to a system for use with a broadband network. The system includes a collector configure to collect raw data indicative of network operation from a network. The system also includes first metric determining means coupled to the collector and for receiving the raw data from the collector. The first metric determining means also manipulates the raw data to periodically determine performance metrics for lower topological layers of the network. The performance metrics for lower topological layers are assigned one of a plurality of predetermined performance levels and are associated with a time period. The system also includes combining means coupled to the determining means and for combining

the performance metrics for lower topological layers into performance metrics for higher topological layers. The performance metrics for the higher topological layer are associated with the time period and are indicative of the higher topological layer being one of the predetermined performance levels during the time period.

New Claims 39 and 40 are respectively directed to a computer program product and method substantially corresponding to the system recited in Claim 34.

Feinberg describes a quality of service provision for a voice or other delay sensitive call connections established over the Internet which is achieved by generating a QOS performance parameter value corresponding to the performance of one or more packet based call connections using common network resources. The QOS performance parameter value is compared to an acceptable range of QOS values. One or more call connections using common packet network resources are terminated if the QOS performance parameter value does not fall within an acceptable range of QOS values.[1]

In Feinberg, QOS is derived and compared to a threshold to identify a problem with a VoIP call and which is then used to make a decision to disconnect some active calls to guarantee the QOS of the remaining calls. The QOS parameter value of Feinberg is a derived piece of network data such as a packet loss or packet lost per second which is a metric directly representative of either what happened on the network or the state of the network.[2] Other network data mentioned in Feinberg are jitter latency and out of sequence packets. These parameters relate to a physical quantification of the state of the network. In Feinberg, the network data is compared to a threshold and as a result an action may be taken.[3] No additional quality metric is derived, only action is taken in Feinberg as a result of these initial parameters. Thus, the network data of Feinberg is analogous to block 126 of Applicants'

[1] Feinberg, Abstract.
[2] Feinberg column 5, lines 18-25; column 4, lines 20-35.
[3] Feinberg column 6, lines 38-56.

Figure 7, and is not a higher level performance metric derived from lower level performance metrics.

Dziekan describes a hybrid fiber coaxial axis network manager which is formed to support a variety of functions related to the operation and management of a hybrid fiber coaxial access plant. The network manager includes a topology discovery module that can function either automatically or under control of a command from an access network manager. The network manager pulls individual network elements to identify their type and location, thus creating a topological map of the network. Polling can be accomplished in either the analog or digital domain.[4]

In Dziekan, diagnosis element 160 takes information received from network elements 102-106 and processed by other entities (such as downstream monitoring module 110) and determines where a fault may exist in the network. Diagnosis element 160 allows the launching of queries into the system wherein the authorized service providers can request diagnostic tests of the network elements to determine their health. In a particular embodiment, diagnosis element 160 can, on demand, run predefined tests to determine a route cause of network problems detected by a subscriber. As an example, a subscriber experiencing a low throughput on his cable model (e.g., modem 102) can call his service provider (e.g., data provider 105) who can, in turn, request diagnostic tests through diagnosis elements 160.[5]

Also in Dziekan, a return path monitoring module 130 is used to determine if data is being accurately transmitted in an upstream path from a network element to the head end. Return path monitoring module 130 collects information from a variety of network elements including telephony test points and head end equipment. Return path monitoring may include

[4] Dziekan, Abstract.
[5] Dziekan column 4, lines 37-51.

measurement of BER, lost frames, endless ranging, carrier to noise ratios, and other measurements that may be made at either the physical or MAC level layers.[6]

Veres describes a method and system of identifying and determining degradation of the quality of service perceived by subscriber in a network such as the Internet. Traffic of a individual application as well as aggregate traffic of a subscriber are monitored, captured, and processed to produce QOS statistics. End to end QOS metrics are provided for TCP connections based on the observation of packet blows at a single monitoring point. The QOS metrics include, for example, packet loss internally and externally to the monitoring point, detection of stalled periods, an estimation of path delay.[7] Veres describes graphing at least one of the metrics over a length of time.[8]

The Office Action repeatedly cites Feinberg, Col. 5 lines 31-45 as teaching very specific features of claims 29, 30, 31, and 32 (similar to cancelled claims 10, 11, 12, 16, 17, 18, and 19). Feinberg, Col. 5 lines 31-45 provides little more than a very general statement that there are unlimited (but unspecified) manners of processing and shaping raw data.

> "...it would be understood by those skilled in the art that the number of combinations and permutations for processing or shaping the raw data which comprises the QoS events to obtain QoS parameter values is nearly unlimited, and is merely a matter of design choice and system capabilities..." (Feinberg, Col. 5 lines 31-45).

Applicants submit that such a sweeping generalization cannot preclude the patenting of every possible novel manner of processing raw data. For example, consider a patent teaching a generic square hammer head and straight handle, and including a general statement to the effect that ' it would be understood by those skilled in the art that there are an unlimited shapes and sizes of hammers for driving nails'. Such a statement, without more, would not anticipate subsequently conceived and specially-shaped hammer heads and handles. And yet asserting that a general statement that there are unlimited (but unspecified) manners of

[6] Dziekan column 5, lines 39-58.
[7] Veres, Abstract.
[8] Veres Figures 12a, 12b, 12c and 13.

processing and shaping raw data teaches the very specific aspects of claims 29, 30, 31, and 32 amounts to essentially the same thing. The specific processing recited in claims 29-32 includes weighting of the raw data, weighting by priority/impact on network performance, and normalizing. No such features are taught in any of the cited references.

The MPEP and the courts have also frowned upon applying generalizations in rejection of specific claim features. For example, the courts have held that the fact that a claimed species or subgenus is encompassed by a prior art genus is not sufficient by itself to establish a prima facie case of obviousness. In re Baird, 16 F.3d 380, 382, 29 USPQ2d 1550, 1552 (Fed. Cir. 1994) ("The fact that a claimed compound may be encompassed by a disclosed generic formula does not by itself render that compound obvious."); In re Jones, 958 F.2d 347, 350, 21 USPQ2d 1941, 1943 (Fed. Cir. 1992) (Federal Circuit has "decline[d] to extract from Merck [& Co. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir. 1989)] the rule that... regardless of how broad, a disclosure of a chemical genus renders obvious any species that happens to fall within it."). See also In re Deuel, 51 F.3d 1552, 1559, 34 USPQ2d 1210, 1215 (Fed. Cir. 1995).

Claims 27, 34, and 39 recite, *inter alia*, combining performance metrics for lower topological levels of the network into a metric of network performance for a higher topological level of the network, where the higher topological level comprises the lower topological levels (see claim 27, which is exemplary of the others). The Office Action cites Feinberg, Col. 5 lines 45-49 as teaching the claimed aspect(s). Feinberg, Col. 5 lines 45-49 recites, *inter alia*, a QoS parameter value produced by summing the total number of lost packets in a one second period. Thus, Feinberg, Col. 5 lines 45-49 teaches summing values over a one second interval, which is something else entirely than combining performance metrics for lower topological levels of the network into a metric of network performance for a higher topological level of the network, where the higher topological level comprises the

lower topological levels. Note also the distinction between raw data, and metrics derived from the raw data. The claims recite the combining of lower-level metrics to form a metric for a higher topological level, not merely combining raw data into metrics.

The Office Action cites Feinberg, Col. 5 lines 50-60 as teaching the claimed aspect(s). Feinberg, Col. 5 lines 50-60 recites, *inter alia*, a QoS acceptance value representing acceptable limits (range or threshold) associated with the specified QoS parameter value. Thus, Feinberg, Col. 5 lines 50-60 teaches a value representing acceptable limits for a quality parameter, which, again, is something else entirely than combining performance metrics for lower topological levels of the network into a metric of network performance for a higher topological level of the network.

The following table provides a summary of at least some of the distinctions between claims 27, 34, and 39 and Feinberg, Col. 5 lines 45-49, and Feinberg, Col. 5 lines 50-60.

Claim 27, 34, and 39	Feinberg, Col. 5 lines 45-49
combining performance metrics for lower topological levels of the network into a metric of network performance for a higher topological level of the network, where the higher topological level comprises the lower topological levels	summing values over a one second interval
Claim 27, 34, and 39	Feinberg, Col. 5 lines 50-60
combining performance metrics for lower topological levels of the network into a metric of network performance for a higher topological level of the network, where the higher topological level comprises the lower topological levels	a value representing acceptable limits for a quality parameter

Claim 34 recites, *inter alia*, the performance metrics for the higher topological layer also associated with the time period of the metrics used to form it, and indicative of the higher topological layer being at one of the pre-determined performance levels during the time period (see claim 34, which is exemplary of the others). The Office Action cites Feinberg, Col. 5 lines 30-60 as teaching the claimed aspect(s). Feinberg, Col. 5 lines 30-60

recites, *inter alia*, monitoring QoS performance parameter data and storing the data as QoS events records (304). Stored QoS events are processed to obtain a QoS parameter value (306). The stored QoS events may be of any number of performance-indicating types, including but not limited to, packet loss, packets received out of sequence, network delay, jitter, or other performance data. Thus, Feinberg, Col. 5 lines 30-60 teaches simply creating a QoS metric from raw QoS data, not associating performance metrics for the higher topological layer with the time period of the metrics used to form it. In Feinberg there is simply no association of a performance metric for a higher topological network level with the time period of lower-level metrics used to form it. Feinberg simply does not address the situation where metrics for lower-level network elements are combined to represent a performance metric of a higher network level.

Feinberg, Col. 5 lines 30-60 further recites a specific embodiment in which the defined QoS event is packet loss, and a QoS parameter value is produced by summing the total number of lost packets in a one second period. Thus, Feinberg, Col. 5 lines 30-60 teaches creating the QoS metric by summing raw data over a one-second period, which, again, is something else entirely than associating the performance metrics for the higher topological layer with the time period of the metrics used to form it.

Feinberg, Col. 5 lines 30-60 further recites the QoS acceptance value representing acceptable limits (range or threshold) associated with the specified QoS parameter value. Thus, Feinberg, Col. 5 lines 30-60 merely teaches specifying a single range of acceptable values for the performance metric, not indicating a network topological layer being at one of pre-determined performance levels of the lower-level network elements that comprise it.

The following table provides a summary of at least some of the distinctions between claim 34 and Feinberg, Col. 5 lines 30-60.

Claim 34	Feinberg, Col. 5 lines 30-60

the performance metrics for the higher topological layer also associated with the time period of the metrics used to form it, and indicative of the higher topological layer being at one of the pre-determined performance levels during the time period	simply creating a QoS metric from raw QoS data
Claim 34	Feinberg, Col. 5 lines 30-60
the performance metrics for the higher topological layer also associated with the time period of the metrics used to form it, and indicative of the higher topological layer being at one of the pre-determined performance levels during the time period	creating the QoS metric by summing raw data over a one-second period
Claim 34	Feinberg, Col. 5 lines 30-60
the performance metrics for the higher topological layer indicative of the higher topological layer being at one of the pre-determined performance levels during the time period	merely specifying a range or threshold of acceptable values for the metric

Claims 28, 33, 35, and 39 recite, *inter alia*, the data-processing apparatus configured to combine cable-modem hour metrics for lower topological levels of the network into a cable-modem hour metric for the higher topological level of the network (see claim 28, which is exemplary of the others). The Office Action cites Dziekan, Col. 4 lines 37-45, lines 48-51 as teaching the claimed aspect(s). Dziekan, Col. 4 lines 37-45, lines 48-51 recites, *inter alia*, launching of queries into the system wherein the authorized service providers can request diagnostic tests on the network elements to determine their "health". As an example, a subscriber experiencing a low throughput on his cable modem (e.g., modem 102) can call his service provider (e.g., data provider 105) who can, in turn, request diagnostic tests through diagnosis element 160. Thus, Dziekan, Col. 4 lines 37-45, lines 48-51 merely teaches launching equipment diagnostic tests when a subscriber calls to report low throughput on a cable modem, not combining cable-modem hour metrics for lower topological levels of the network into a cable-modem hour metric for the higher topological level of the network. As previously noted, the reference makes a general statement that other types of raw data measurements could be made, but provides no suggestion that those measurements would be

combined into a cable modem hour metric, or even that the raw data measurements would specifically apply to cable modems at all.

The following table provides a summary of at least some of the distinctions between claims 28, 33, 35, and 39 and Dziekan, Col. 4 lines 37-45, lines 48-51, and Dziekan, Col. 5 lines 39-58.

Claim 28, 33, 35, 39	Dziekan, Col. 4 lines 37-45, lines 48-51
the data-processing apparatus configured to combine cable-modem hour metrics for lower topological levels of the network into a cable-modem hour metric for the higher topological level of the network	merely launching equipment diagnostic tests when a subscriber calls to report low throughput on a cable modem
Claim 28,33,35,39	Dziekan, Col. 5 lines 39-58
the data-processing apparatus configured to combine cable-modem hour metrics for lower topological levels of the network into a cable-modem hour metric for the higher topological level of the network	measurements of BER, lost frames, endless ranging, carrier-to-noise (C/N) ratios, and other measurements
Claim 28,33,35,39	Dziekan, Col. 5 lines 39-58
the data-processing apparatus configured to combine cable-modem hour metrics for lower topological levels of the network into a cable-modem hour metric for the higher topological level of the network	merely setting a cable modem in a diagnostic mode

Regarding claim 36, there is simply no teaching whatsoever in Feinberg or Dziekan of determining if the raw data is a root cause or a factor in the root cause of performance degradation for lower topological layers of the network, and when forming the performance metric for lower network levels, weighting the raw data according to whether it's a root cause or a factor in a root cause. Such features are quite simply absent from Feinberg or Dziekan, and thus claims 36 should be allowed in light of these references.

Regarding claims 37, there is simply no teaching whatsoever in Feinberg or Dziekan of promoting the raw data from a factor to a root cause when the raw data is found to have a direct correlation on network performance, and/or for demoting the raw data to a factor from a root cause when the raw data is not found to have a direct correlation on network

performance. Such features are quite simply absent from Feinberg or Dziekan, and thus claims 37 should be allowed in light of these references.

In summary, MPEP §706.02(j) notes that to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Also, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck,* 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Without addressing the first two prongs of the test of obviousness, Applicants submit that the Official Action does not present a *prima facie* case of obviousness because both Feinberg and Dziekan fail to disclose all the features of Applicants' claimed invention.

Accordingly, in view of the present amendment and in light of the previous discussion, Applicants respectfully submit that the present application is in condition for allowance and respectfully request an early and favorable action to that effect.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.

James J. Kulbaski
Attorney of Record
Registration No. 34,648

James D. Hamilton
Registration No. 28,421

Michael E. Monaco
Registration No. 52,041

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 06/04)

I:\ATTY\MM\AMENDMENT\2884\260155US.AM DUE 11-9-05.DOC